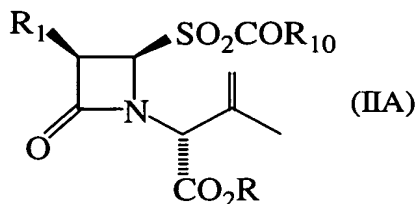


ABSTRACT

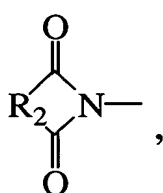
The present invention relates to novel intermediates for the preparation of 3-methylenecephams of the formula IIA.



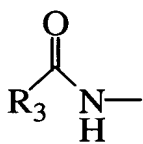
wherein:

R is a carboxylic acid protecting group;

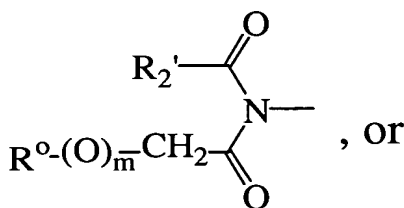
R₁ is a group of the formula;



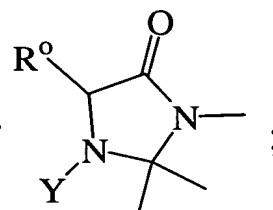
(i)



(ii)

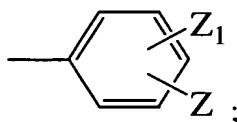


(iii)



(iv)

R₁₀ is C₁-C₆ alkyl, C₁-C₆ polyfluoroalkyl, C₃-C₆ cycloalkyl, adamantyl, phenyl, substituted phenyl, phenyl(C₁-C₃ alkyl), diphenylmethyl, or substituted phenyl(C₁-C₃ alkyl), or a group of the formula



Z is solid polymer support; and

Z₁ is one or two groups independently selected from the group consisting of hydrogen, halo, hydroxy, protected hydroxy, nitro, cyano, trifluoromethyl, C₁-C₄ alkyl, and C₁-C₄ alkoxy.

Applicants respectively submit that the amendments are fully responsive to the Examiner's rejection. The specification has been amended to address the Examiner's concerns as well as rejected claim 4. Support for these amendments can be found throughout the filed specification and claims.

Respectfully submitted



Jeffrey J. Skelton Reg. No. 42,152

Dec 13, 2004

3870 Orleans Lane N
Plymouth MN 55441
(32) 15 400 511

I hereby certify that this correspondence is being deposited with the U.S. Postal service as First Class Mail on the date indicated and addressed to Stop Amendments, Assistant Commissioner for Patents, P.O. Box 1450, Alexandria VA. 22313-1450

Date: Dec 13, 2004

Signature: Jeffrey J. Skelton

Typed name of person certifying Jeffrey J. Skelton